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(54) Title: RADIOPHARMACEUTICAL GENERATION SYSTEM

(57) **Abstract:** The present invention relates to radiopharmaceutical generation system for use in generating a radiopharmaceutical, and is particularly concerned with improving the amount of information, relating to the process of generating the pharmaceutical, that is available. In a first aspect of the invention, the radiopharmaceutical generation system comprises a fluid processing system arranged to perform one or more processes in relation to a radiopharmaceutical, the fluid processing system having a plurality of system elements and being arranged to output signals indicative of a state of the fluid processing system, each of said system elements having an expected operative state; and at least one monitoring software component arranged to derive data from said output signals and to compare said derived data with one or more operating conditions in order to identify system elements not in the expected operative state. Since the expected operating state of the system elements is monitored during execution of the processes, real-time monitoring is possible. This means that fault finding and trouble shooting is easier than it is with current systems.

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